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Application No.: 09/445,310

DEC 18 2006

Docket No.: 10936-35

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yasuo Tsunogae et al. : Paper No.:
Serial No.: 09/445,310 : Group Art Unit: 1713
Filed: December 6, 1999 : Examiner: F. Teskin
For: Insulating Material Containing Cycloolefin Polymer

DECLARATION UNDER 37 CFR 1.182

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Tohru HOSAKA declares that:

1. He is a coinventor of and is familiar with the present application Serial No. 09/445,310 filed December 6, 1999, and is familiar with the Official Action dated June 6, and the reference cited therein.

2. In response to the Official Action, the following experiments were carried out either by him or otherwise carried out under his direct control and supervision.

Experiment 1:

In the same manner as in Example 1 of the Kataoka et al U.S. Patent No. 5,895,800, thirty parts by weight of the epoxy-modified thermoplastic resin A obtained in Referential Example 1 and 1.2 parts by weight of 4,4'-bisazidobenzal(4-methyl)cyclohexanone were dissolved in 100 parts by weight of xylene. As a result, a

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uniform solution was obtained without producing any precipitate.

Said solution was charged in a light-blocking, closed vessel for a three-day storage at 25°C. Thereafter, said solution was used as in Example 8 of the Kataoka et al to form a coating film of 15 µm in thickness on a silicon wafer. Then, using a test pattern mask as in Example 8 of the Kataoka et al, the coating film was exposed to ultraviolet light. However, no pattern could be formed because of a striking drop of the sensitivity of the photosensitive resin composition forming the coating film.

Experiment 2:

2.1. As in Example 1 of the specification of this application, a solution of a photosensitive resin composition containing an epoxy-modified norbornene copolymer and a photoreactive substance was coated on a substrate to form a coating film of 40 µm in thickness.

The coating film was exposed to ultraviolet light having light intensity of 150 mJ/cm² at 365 nm using a test pattern mask for formation of via holes and then developed with cyclohexane to form via holes 50µm in diameter.

2.2. As in Example 4 of the specification of this application, a solution containing a maleic acid-modified norbornene copolymer, a crosslinking aid and an organic peroxide was coated on a substrate to form a coating film of 40 µm in thickness.

After the coating film was further heated 220°C for 4 hours to completely cure it, via holes 50µm in diameter were formed using a UV-YAG laser.

2.3. As in Example 5 of the specification of this application, a solution containing a hydroxy-modified norbornene terpolymer, a crosslinking aid and an organic peroxide was coated on a substrate to form a coating film of 40 µm in thickness.

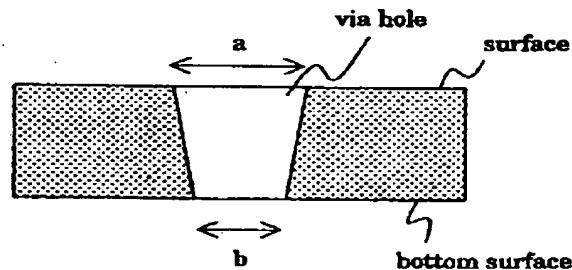
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After the coating film was further heated 220°C for 4 hours to completely cure it, via holes 50µm in diameter were formed using a carbon dioxide laser.

2.4. Each of the thus prepared coating films was released from the substrate to observe the sectional shape of the via holes.

As depicted in the drawing given below, the aspect ratio of the section of the via hole is given by a/b wherein a is the diameter of the via hole as measured on the surface of the coating film and b is the diameter of the via hole as measured on the substrate side. The smaller the aspect ratio (a/b), the better the shape of the via hole becomes.



For each coating film, the aspect ratios (a/b) of the sections of ten via holes were measured. As a result, in the coating film of Example 1 with via holes formed by means of photolithography, the aspect ratios (a/b) of the sections of all the via holes exceeded 2, indicating that the sectional shapes were less than satisfactory.

In the coating films of Examples 4 and 5 with via holes formed by means of a laser, by contrast, the aspect ratios (a/b) of the sections of all the via holes were less than 1.5, indicating that the sectional shapes were satisfactory.

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2. Tohru HOSAKA declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

Tohru Hosaka

Tohru HOSAKA

November 4, 2002

Date